Israeli Capabilities to Strike Iran

An Open Source Analysis

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INTRODUCTION

Lately there has been a considerable amount of debate surrounding Israel striking Iran in a preemptive strike against their nuclear facilities. A lot of debate has gone into whether or not Iran is actually capable of making a nuclear device and if that is even their intent. Just as much debate is occurring regarding Israel’s intentions, will they follow through? There are many more questions that are going unanswered in the political sphere. Will Iran hold the United States accountable for Israel’s actions? Will Israel back down join with other countries imposing further sanctions on? Will Iran comply with the IAEA and allow inspectors into all of their facilities?

All of these are very relevant questions but there is one very important question not being asked; CAN Israel successfully strike and destroy all of the critical nuclear facilities within Iran? Thus far it is almost viewed as a given fact that Israel can do this. It is the intent of this paper to answer this question conclusively with open sourced materials.

This paper will provide a conclusive and inclusive overview of sourced data surrounding all important areas of Israeli offensive and Iranian defense. Several assumptions have been made for the purposes of this paper. These assumptions are intended to shape the strategic picture for this paper. The assumptions are as follows:

- Iran has not complied with IAEA or international regulations/requests.
- It is either known or assessed with high confidence that Iran has or is close to a nuclear weapon.
- Israel has committed to striking Iranian targets.
- The US is not offering any aid to the Israeli Strike.
The purpose of these assumptions is to help focus on the question at hand, is Israel capable of successfully conducting such a strike.

**IRANIAN DEFENSE**

Before the Iranian revolution the country’s air force was quite formidable. As an ally of the United States the Iranians had access to many of our advanced weaponry of the time. The Iranians had US trained fighter pilots, F-14 Tomcats, F-4, and HAWK SAM systems (Global security, 2011). Since then most of the US trained pilots have been jailed or executed under charges of conspiracy shortly after the Ayatollah took power.

**AIR FORCE**

Currently Iran has worked to rebuild its air force and has benefited from indiscriminate sales persons in Russian and within China. According to several open source military journals Iran has a modernly equipped air force. This is in tanks predominantly to Saddam Hussein who sent the majority of his fighters across the border prior to the invasion of Iraq by the US. Many of these aircraft are now unserviceable due to a lack of parts and experienced pilots.

- Global Security and Jane’s assess Iran’s Air force to contain: 45 F-4s, 10 F-14s and an additional 350 modern aircraft including MIG-27, 29, 31s, SU-24, 25s, and 27s. The Iraqi exodus added; 24 Mirage F-1s, 4 Su-20s, 40 SU-22s, 24 SU-24, 7 SU-25s, 9 Mig-23s, and 4 Mig-29s. (Global Security, 2011)

- Iran has worked hard to secure its airspace from nations surrounding it. Most of the aircraft in inventory are permanently grounded due to a lack of spare parts. Iran relies on the black market for purchase of spare parts, of which are very rare. (Jane’s, 2011)
**Assessment:** Even though Iran is in possession of a few advanced fighters, tactics and flight training is still less than adequate. Given the lack of proper parts maintenance is the largest limiting factor for the Air force. Any plane launched at a threat would only be employed at a fraction of its ability.

**STRATEGIC**

Where Iran’s fighters and pilots are lacking it makes up with an Integrated Air Defense System (IADS). Iran has worked with numerous foreign partners to build a formidable collection of surface to air missiles (SAMs). Strategically Iran expects to be attacked on its own soil and has prepared itself for such an attack. Any entity attempting to enter Iranian airspace should be prepared for a fight.

- Australia believes that Iran has: Russian made SA-5s with a range of 200Nm and can engage high flying targets, Chinese CSA-1 and 2 SAM systems with an effective range of 30Nm as well as Raytheon built HAWK SAM systems whose range is 15Nm. (AUSA 1, 2010)
- The base SA-5 is the biggest concern for any fighter entering Iranian Airspace. It is reported to have been digitally upgraded making it less prone to jamming with modern ECCM features including frequency hopping and non-coherent radar (RDR) emitting decoys. (AUSA 2, 2011)
- Iran has shown several SAM systems during military parades that look to be domestically produced clones. The MERSAD SAM is an carbon copy of the HAWK system. The ‘30N6’ system also has an uncanny resemblance to the SA-20 system and its distinctive TOMBSTONE RDR.
- Iran has a contract for the delivery of a SA-20A system from Russia of which it has already paid for. The system in question is a base model that does not have the long range RDR package of the newer SA-21.

**Assessment:** Iran has worked hard to focus its resources on building an expansive IADS system. After the devastating ‘War of The Cities’ against Iraq Iran has strove to secure its borders and airways. Iran has
shown it prefers advanced IADS to fighters when it brokered a number of its Mig-29s to China for Missile technology. Iran seems to live by the fact that missiles are cheap and fighters are expensive.

TARGETS

Iran recognizes that Israel wants to destroy any chance the country has of producing a nuclear bomb. Any attempt by Iran to ease the international community has fallen on deaf and suspicious ears. The recent IAEA report on Iran outlines with very good reason why these reassurances are not wholly forth coming when it comes to the nature of their research and production (IAEA, 2011).

• The survey of Natanz could not fully verify the scale of the operation. The inspectors noted that other than described activity was occurring but, Iran’s lack of cooperation prevented any further analysis. (IAEA, 2011)

• Against IAEA direction the Esfahan complex has not only continued but, increased its production of uranium conversion, fuel fabrication, and heavy water. (IAEA, 2011)

• ISIS has estimated using various imagery and satellite photography that Natanz has a 32K Ft² facility around 20 meters underground protected by around six feet layers of concrete. The Esfahan facility is still above ground however, excavation was noted at the site. (Albright and Hinderstein, 2003)

Analysis: Iran knows that their production facilities, Natanz, are its most critical. The fact that have buried the critical components is a telling fact. Not only does this protect the facility, it also hides it from scrutiny. The actions Iran has taken protect these facilities in such a military fashion raises concerns. The IAEA findings are disturbing as well. With the Bushier facility online there is no need to Iran to continue to produce any fissile materials, especially at such a quantity.
ISRAELI CAPABILITIES

Israel has one of the most advanced Air Forces in the world. Their Force is arguably one of the most well trained and equipped Air Forces in the world. This country has lived in a constant state of conflict. When Israel was faced with a Nuclear Iraq they struck swiftly and decisively (Jewish Virtual, 2011). The raid was daring, against a well-protected target, far from any friendly territory using technologically limited aircraft and dumb bombs. The highly trained Israeli Air Force completed the raid with 100% accuracy suffering no casualties. Israel has since drastically increased its technological capabilities and added highly accurate, long range, potentially nuclear intercontinental ballistic missiles (ICBMs) to their arsenal (Riedel, 2011).

AIR FORCE

Since the strike on the Iraqi reactor at Osirak the Israeli Air force has drastically upgraded its fleet and weaponry. Now in the inventory are bunker busters, highly accurate guided munitions, and the state of the art F-16I.

- In 2004 Israel received the first of 102 F-16Is. A highly advanced version of the aircraft that struck Osirak. (Global Security 2, 2011).
- Upgrades include 2 x external fuel tanks; 2 x above wing conforming tanks; an extensive EW/ECCM package; satellite uplink with a data sharing uplink system that has a 1 gig router; GPS and advanced INU/SAR integrated navigation system; full spectrum weapons employment from a Helmet cueing system; 2 x seats with full aircraft capabilities accessible from both (Defense-update, 2005)
- The F-16I can carry two of the new Popeye-2 missile. A data link, 75Km standoff enabled missile that contains a 352Kg HE penetrating warhead (Missile Threat, 2011) or possibly the GBU-39 5,000 pound equivalent bunker buster missile (Cordesman, 2007)
Assessment: If the F-16I is outfitted with Small Diameter Bombs (SDB), GBU-39, the application could be almost endless. With a performance similar to the BLU-109 5000lb penetrator the smaller GBU-39 can punch through 30ft of earth or up to 5ft of steel reinforced concrete. American fighters have been retrofitted to carry up to eight GBU-39s. There is no data on the ability of the F-16I to carry the SDB, however given Israel’s ability to engineer specialty parts it’s highly likely that this has been addressed and resolved.

STRATEGIC

Israel’s defense doctrine is the opposite of Iran’s. Israel relies heavily on its Air Force for protection and prefers to take the fight to the enemy. Israel has the ability to employ ICBMs with a considerable payload and range.

• Israel’s ICBM program has produced a device capable of traveling a demonstrated 1,500Km and carrying up to 1,000Kg, the Jericho 2. It is believed that the missile is actually capable of over 4,000Km of flight (CISS, 2001).
• Israel hinted at its nuclear capability in a warning to Saddam Hussein, threatening to ‘vaporize’ him within an hour (IMFA, 2011)

Assessment: Considering the potential ability to employ the GBU-39 it’s highly unlikely that Israel would utilize a Jericho 2 against a target unless the operation was a disaster. Once Israel has committed to striking Iran there will be no turning back and if the operation begins to fail it would be reasonable to expect the country to employ nuclear devices regardless of political repercussions.

ASSESSED SCENARIO

Israel certainly has the capabilities to take the fight to Iran. The Iranian’s Air force will stand no chance against Israel’s highly trained and equipped pilots. The majority of Iran’s defensive fighters will
be destroyed beyond visual range (BVR) of the F-16Is with advanced long range air to air missiles. With RDR capabilities supplied by Russia Iran will be well aware of the ingressing Israeli fighters (AUSA 1, 2010). IADS will be on full alert, point defense systems around the most important of Iran’s facilities will be on high alert constantly scanning for threats.

Given the ranges of Iran’s SAM systems the airways will be immediately closed. The IADS will pose a severe risk to any traffic in the area. The system operators will most likely target and shoot down any aircraft within their engagement zone. Utilizing the same proven tactics from the Osirak raid the F-16s will most likely employ a low flight profile to take advantage of RDR limitations and extreme terrain variations throughout Iran. The advances in the F-16Is avionics will allow the flight to take advantage of both the cover of darkness and bad weather if available. These will maximize the aircrafts’ ECCM ability and exploit potential faults in the Iranian IADS coverage.

It’s extremely likely that there will be surprises the can only be countered by flying decoys. The F-16 is able to carry 2x turbojet decoys potentially mitigating any threat from SAM systems. Natanz and Esfahan are the critical nodes needed to cripple Iran’s production and research ability and of high target value.

To strike, the aircraft only need be relatively near the target. The pilots will take advantage of the precision and standoff capability of the bunker busters. To reach the facility’s that are hardened it will take at least two GBU-39s to soften the target enough for a third to cause damage. This requires dropping all three on the same exact point, a very difficult task. With each jet carrying eight missiles getting enough power on target won’t be hard. The largest threat comes as the fighters loiter near their targets to verify BDA (battle damage assessment) as Iranian IADS try to lock on. Through all sources available it seems highly unlikely that any of Iran’s IADS will provide any significant roadblock to Israel’s safe completion of the strike.
The only limitation not discussed previously is any air refueling of the F-16s that may be needed. Most, not all, of Israel’s tankers do not have an ECCM capability. The few ECCM equipped aircraft that Israel has will certainly be utilized in any strike launched against Iran. The simplest solution is a tanker cell, protected by a flight of F-15s, established just outside the range of Iranian SAM engagement zones.

The new Israeli F-16I has two additional conformal tanks along its spine. The actual size of the tanks are not published by any Israeli authority but are assessed, based on pictures of the F-16I with tanks and standard F-16 without tanks, to hold about 500 US gallons total. Combine this with the internal capacity to hold 1,072 US gallons and additional 1,800 gallons in external tanks (two under wing tanks and one centerline tank) the F-16I can carry upwards of 3,400 US gallons. Taking previous blocks into consideration the approximate distance the F-16I could fly is about 1,550 miles unrefueled.

The distance from Jerusalem to potential targets near Tehran is 970 miles. The F-16I could reach the intended target and get out of Iranian airspace without ever needing to refuel. To increase the F-16s combat effectiveness Israel would most likely refuel outside of Iranian airspace and conduct the mission after the tanker aircraft have headed back to Israel.

This analysis is intended to be an overview of the capabilities of both parties and thus relates to its brevity on an extremely lengthy and detailed subject. Overall it is assessed that Israel is highly capable of striking any target deep within Iran’s territory. However successful or not the strike by Israel would be, Iran is highly likely to mount a counterstrike against any Israeli and US interests in the Middle East. Such a counter strike is outside of the scope of this analysis, but the potential severity of such a retaliation warrants considerable scrutiny.
REFERENCES


Riedel, Bruce 2011. Will Israel Really Strike Iran?. The Daily Beast, November 2, 2011


